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Office Memorandum • UNITED STATES GOVERNMENT

TO : Assistant Director, RR
THRU : Chief, Industrial Division *HCS*
THRU : Chief, Economic Research *gla*
FROM : Chief, Aircraft Branch

DATE: 5 May 1954

SUBJECT: Moscow May Day Air Show

1. Ideal weather conditions existing in Moscow on 1 May 1954 enabled U.S. observers to expect excellent results from their photo coverage of the air portion of the May Day parade. As had been anticipated from the practice flights of the last two weeks, the Russians flew two new type aircraft, (1) turbo-jet heavy bomber, identified as the Type-37, and (9) turbo-jet medium bombers. In all probability, the Type-37 is the same aircraft which had been seen flying on 18, 19, 27, and 28 April, and the (9) jet medium bombers are from the group of (11) which were observed by the British Air Attaches on 25 and 27 April. U.S. Attaches had seen (9) medium jet bombers on 27 April.

2. The May Day parade order of flight was led by (1) Type-37 with (2) Type-38's on each wing, followed by (9) jet medium bombers, (81) IL-28's, and (81) Type-38's flying in vees of three in trail at an altitude of approximately 1,000 feet. Results of the photography and sound recording are being sent by pouch, but observers of the show have indicated that the Type-37 is $3\frac{1}{2}$ to 4 times as long as the Type-38. In contrast with the photography of the 28 April rehearsal, which had indicated the engine installation in the Type-37 as similar to the British Comet II transport except that the nacelles protrude about three feet forward of the wing, the May Day observations revealed that the engines bulge slightly more above and below the wings than in the British type. The engines in the Comet II are partially buried in the wings with air intakes flush with the leading edge. The fuselage of the Type-37 had (2) blisters, one on each side of the nose section, the purpose of which has not been estimated. A gun turret was seen in the tail. The wings of this jet heavy bomber are described as having a curved leading edge similar to that of the Type-38 fighter. This presumably refers to the difference in the angle of sweep of the inboard and outboard sections of the wing of the Type-38, the inboard sweep being 5° greater.

3. The jet medium bombers are described, as a result of the May Day observations, as being slightly more than 100 feet in length. Visual observations on 28 April of this type indicated two exhausts aft of each wing, but on May Day only one was observed on each wing. This would normally be indicative of only one turbo-jet engine in each wing, but

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the nacelles are described as appearing large enough to house two engines each. The thickness of the wing is estimated to be about the same as the USAF B-47, an aircraft conspicuous for its extremely thin wing. This new jet medium bomber also has a gun turret in the tail. Protrusions under the wings previously reported are indicative of external fuel tanks. Other details, such as the descriptions of the empennage similar in configuration but larger than that of the IL-28, and the nacelles close to the fuselage and protruding about three feet forward of the wing leading edge, were not changed by the May Day observations.

4. Previous estimates of the length of the Type-37 as being three times that of the IL-28, the fuselage of which is 59 feet long, have been decreased by the May Day observations to a more palatable figure in the zone of the USAF B-52, which is 152 feet long. Based on an analysis of the reports of the observations, the Type-37 may be described as slightly smaller than the B-52, with an engine installation similar to the British Vickers Valiant bomber. Burying engines in the wings, as opposed to installation in external pods, is possible with the British thick-wing designs. More modern manufacturing techniques used in the U.S. allow for a thinner wing construction, which is a big factor in determining the type of engine installation. The sighting of only one Type-37 suggests that this jet heavy bomber is still in the prototype stage and, if this is true, may not be expected to appear in operational units until early 1956. Based on U.S. experience with the B-52, the design would have been initiated in late 1950 or early 1951. The only known Soviet research program considering this type aircraft was that concerning the six-jet EF-132, which is reported to have been developed by the German Junkers technicians deported to the USSR after World War II. This project was supposedly dropped in late 1949. It is possible that the Russians took the German data from this program and, starting in 1950, have developed the Type-37 on their own.

5. The estimation of the size of the jet medium bomber, which was originally described as more than twice the length of the IL-28, has been decreased to 100 feet. Observers have compared it to the USAF B-47, which is 107 feet long, but here again the engine installation differs from the U.S. counterpart. The nacelles appeared to be very close or adjacent to the fuselage, with a slight concavity in the fuselage at the mouth of the round air intake. This would indicate that the engines may be, at least partially, in the fuselage and would allow the thin wing construction, as described. The (11) jet medium bombers sighted on 25 and 27 April may be close to the total number produced thus far. If so, this amount most likely is indicative of series production of this type, and can be estimated to have started sometime in the latter half of 1953. Again, based on U.S. experience with the comparable B-47, the first of this type would be available to operational units the latter half of 1954.

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No speeds or altitudes were specified. If the first Long Range Air Army does have operational aircraft of this type assigned, it would indicate that series production started in early 1953.

6. Probably the most significant indication of Soviet air capabilities which was provided by the May Day parade was the possible evidence of development of an operational axial-flow jet engine. Existing operational Soviet jet aircraft are powered by centrifugal jet engines, the highest rating being that of the VK-1A, estimated at 7,000 lbs. static thrust. A wing-buried engine installation almost precludes the use of a centrifugal-flow jet engine of the size necessary to power these large aircraft. The possible thrust which can be developed by an axial-flow engine exceeds that of a centrifugal type of comparable diameter.

7. Two Soviet engineers are reported to have been working on axial-flow jet engines possibly powerful enough for the new jet heavy and medium bombers. Mikulin is believed to have had an engine of 10,000/10,500 lbs. thrust ready for State acceptance tests in late 1952 or early 1953. It is estimated that Lyulka had an 11,500 lb. thrust engine available for testing a year earlier. The results of the tests on both these types, if they were tested, are unknown. The EF-150 experimental jet medium bomber was originally reported to be powered by two Mikulin engines of 13,000 lb. thrust each, but later information negated this report and indicated that the power plants were Lyulkas. There are some indications that the present engines were developed and tested at plant #300 in Moscow during 1953. It can only be concluded at this time that these aircraft are powered by engines of 10,000 to 13,000 lbs. thrust of either Lyulka or Mikulin design.

8. An analysis of the sound recordings from the May Day parade may give more information on the type of engines installed in these new jet bombers than can be derived from visual observation alone, and photography will be a more positive indication of the size and type of these new aircraft. When more information becomes available a firm estimate of production of the new jet medium bomber will be made.

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